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RECEIVED

March 10 2000
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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

BY HAND DELIVERY

Mr. Dale Hatfield
Chief, Office of Engineering and Technology
Federal Communications Commission
445 12th Street SW, Room 7C-155
Washington DC 20554

Re: ET Docket No. 99-231, Amendment of Part 15 of the Commission's Rules Regarding Spread Spectrum Devices — *Ex Parte Filing*

Dear Dale:

Large segments of the spread spectrum industry oppose the wideband frequency hoppers proposed in this proceeding. After careful investigation, these companies, associations, and standards bodies have determined that wideband devices would cause excessive interference to Part 15 spread spectrum equipment that complies with the present rules. We are now attempting to craft a compromise proposal in hopes of finding a settlement acceptable to all major parties and the Commission.

At a meeting in your office on February 18, my colleagues and I argued that the rulemaking should take account of interference into Part 15 equipment that complies with the present rules, notwithstanding that Part 15 is required to accept incoming interference.¹ As we agreed at the meeting, I am writing on behalf of the Wireless Ethernet Compatibility Alliance (WECA) to set out the precedents and policy that support this position.

**Protecting Part 15 from the Introduction of Interfering Equipment
Is Consistent with the Commission's Rules and Policies.**

We remark at the outset that the Notice in this proceeding expressly raises the question of interference into presently compliant Part 15 equipment. The Commission offered for comment:

¹ 47 C.F.R. Sec. 15.5(b).

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We do not believe these proposed rule changes will result in any significant increase in interference to direct sequence spread spectrum systems.²

The Commission discussed measures it believed would control interference, and then continued,

[I]t appears that the proposed reduction in output power and time of occupancy would offset any potential increase in interference. Further, we observe that manufacturers of direct sequence systems that are concerned about interference can improve the robustness of their systems by increasing processing gain.³

The Commission added, "We invite comment on this analysis."⁴

Having properly raised interference into Part 15 equipment as an issue in the Notice, the Commission must now address the issue on its technical merits. WECA and several other parties have filed analyses questioning the Commission's premise. These show that neither the proposed reduction in output power nor a reduction in time of occupancy would offset the increase in interference to compliant spread spectrum equipment. WECA and others also noted that increases in processing gain can protect neither the millions of direct sequence systems already in use, nor compliant frequency hopping equipment.

The Commission has previously ruled on the basis of interference into Part 15 equipment. When Symbol Technologies, Inc. requested authorization for non-overlapping wideband frequency hoppers, the Commission turned down the request, citing only one ground: "We have serious concerns that implementing Symbol's requested changes could result in severe increases in the potential for harmful interference, both to the authorized radio services *and to other Part 15 devices* operating in these bands."⁵

Symbol's non-overlapping channels would have threatened far less interference than the overlapping wideband frequency hoppers pending in this docket. It would be oddly inconsistent for the

² Spread Spectrum Devices, 14 FCC Rcd 13046,13048-49 at ¶ 9 (1999) (Notice of Proposed Rule Making).

³ *Id.*

⁴ *Id.*

⁵ Spread Spectrum Transmitters, 11 FCC Rcd 3068, 3072 at ¶ 23 (1996) (footnote omitted; emphasis added) (Notice of Proposed Rule Making).

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Commission, having turned down Symbol on the ground of interference to Part 15 devices, to refuse to consider the far worse threat of interference to Part 15 devices here.

Sound policy and public interest considerations support this position.

Early Part 15 devices, being notoriously unreliable, were relegated to inessential functions like garage door openers, remote control toys, and cordless telephones. Applications demanding reliability used the licensed services. That changed, however, after the introduction of spread spectrum in 1985.⁶ Spread spectrum provided unlicensed communications that not only caused little interference to conventional, narrowband operations, but were themselves relatively immune to incoming interference. The market responded. By 1995, the Commission could accurately state:

We recognize the important contribution to the public that both Part 15 technologies and amateur operators provide in the 902-928 MHz frequency band. For example, Part 15 devices currently operating in the 902-928 MHz band provide valuable services such as automated meter reading, inventory control, package tracking and shipping control, alarm services, local area networks, and cordless telephones. These devices allow businesses to operate more effectively and efficiently, without the regulatory complexities of many licensed services.⁷

Spread spectrum operations have grown rapidly in the years since then, and now use the 2400-2483.5 and 5725-5850 MHz bands as well. The installed base is approximately \$1.5 billion, representing tens of millions of units. Every sector of the economy now depends on this equipment. The full Commission recognized as much when it established a "safe harbor" within which Part 15 transmitters need not afford interference protection to certain Location and Monitoring Service receivers, notwithstanding that LMS operations are licensed.⁸

⁶ Spread Spectrum and Other Wideband Emissions, 101 F.C.C.2d 419 (1985).

Subsequent rule changes codified the technical requirements and increased potential data rates, Spread Spectrum Systems, 5 FCC Rcd 4123 (1990), and facilitated point-to-point and point-to-multipoint operations by permitting the use of higher gain antennas. Spread Spectrum Transmitters, 12 FCC Rcd 7488 (1997).

⁷ Automatic Vehicle Monitoring Systems, 10 FCC Rcd 4695, 4714 ¶ 34 (1995).

⁸ 47 C.F.R. Sec. 90.361; Automatic Vehicle Monitoring Systems, 10 FCC Rcd at 4714-16.

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In short, the spread spectrum rules have been a stunning success. The Commission's Greg Czumak did not exaggerate in recently calling Part 15 "the jewel in the FCC's crown."⁹

Spread spectrum radios find a wide market in part because they are extremely reliable in the RF environment for which they were designed. Users have responded with applications that demand high but achievable levels of resistance to interference. These include, for example, real-time transactions on the floor of the New York Stock Exchange, in-hospital patient monitoring, and critical communications links. Some within the Commission have expressed concern about an unprotected service carrying important communications, but in practice these systems routinely meet and exceed the expectations of users who have little tolerance for failure.

Notwithstanding the remarkable success of spread spectrum technology, it is impossible in principle to engineer these devices to be capable of tolerating unlimited interference. Designers must make working assumptions about the environment in which a communications device will operate. Existing spread spectrum equipment is designed, not surprisingly, for an environment populated by devices that comply with the Commission's rules. They work very well in that environment. A modification of the rules to permit wideband frequency hoppers would violate these design assumptions, and would cause some existing equipment to fail. Again, this is no shortcoming on the part of the spread spectrum industry, but reflects an irreducible principle of communications engineering.

Some argue that Part 15 users, in being required to accept interference from devices authorized under the rules, thereby lack standing to challenge new rules that would increase interference. This position, we submit, commingles two principles that should properly be kept distinct. Although we acknowledge Part 15's obligation to accept interference under present (or future) rules, that does not extinguish our right to be heard on issues of public importance. If a rule change threatens communications that are important to significant sectors of the economy, we expect this to be matter of concern to the Commission, regardless of who brings it to the Commission's attention.

A refusal to consider interference to Part 15 devices would amount to denying any public interest in Part 15 operations. It is beyond dispute, however, that Part 15, including spread spectrum, has become an important component in the mix of communications technologies that keep this country running. A substantial increase in interference to Part 15 devices would harm the public interest. This fact might have surprised the pioneers of unlicensed operation, but today it is merely evidence that the spread spectrum rules are having precisely their intended effect: to promote inexpensive, flexible, and reliable radio communications. The Commission should not disrupt its own success.

⁹ Remarks of Gregory Czumak at "Opportunities for New Wireless Technologies," Federal Communications Commission, Washington DC (February 16, 2000).

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I am providing two copies of this letter to the Office of the Secretary for filing in this docket, and request a date-stamped copy in return.

If there are any questions about this filing, please call me at the number above.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Mitchell Lazarus". The signature is fluid and cursive, with the first name "Mitchell" written in a larger, more prominent script than the last name "Lazarus".

Mitchell Lazarus
Counsel for the Wireless Ethernet
Compatibility Alliance

cc: Office of the Secretary (2 copies)
Greg Czumak
Julius P. Knapp
Neal McNeil
Michael Marcus
Karen Rackley
John Reed
Office of Engineering and Technology